



**Agenda**

**WATER RESOURCES ADVISORY COMMISSION  
Upper East Coast Water Supply Plan Update**

December 11, 2015, 9:30 AM  
Stuart City Hall, Commission Chambers  
121 SW Flagler Avenue,  
Stuart, FL 34994

FINAL

1. Welcome and Introductions – Mark Elsner, Administrator, Water Supply Development Section, SFWMD
2. Overview of Plan Update – Mark Elsner; Linda Hoppes, Lead Planner; and Cynthia Gefvert, Section Leader; Water Supply Development Section, SFWMD
3. Next Steps – Mark Elsner
4. General Public Comments
5. Adjourn

## 2016 Upper East Coast Water Supply Plan Update



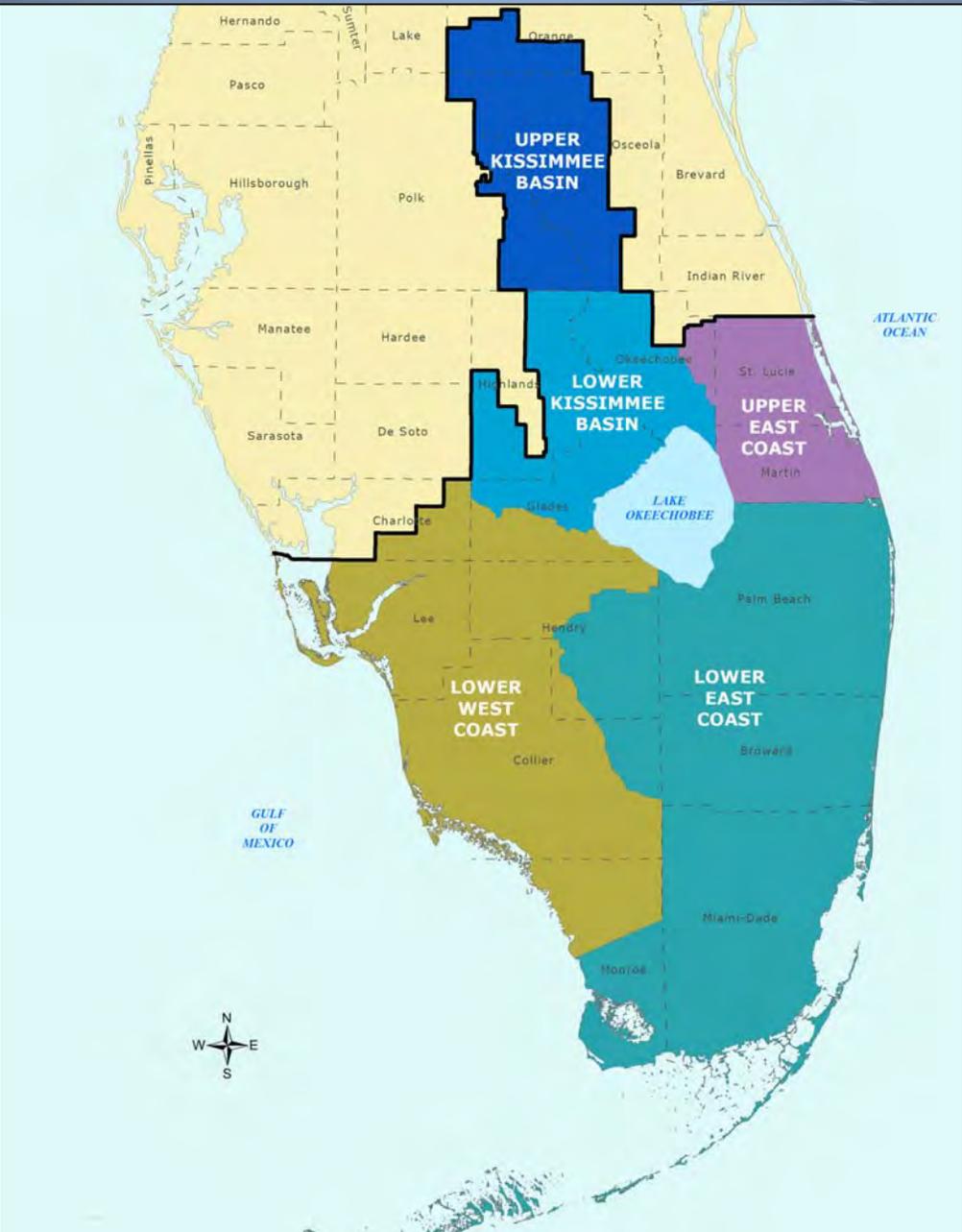
**Mark Elsner, PE, Administrator**  
**Cynthia Gefvert, PG, Section Leader**  
**Linda Hoppes, AICP, Lead Planner**  
**Water Supply Development Section**

**Upper East Coast Plan WRAC Issues Public Workshop**  
**Stuart, FL**



December 11, 2015

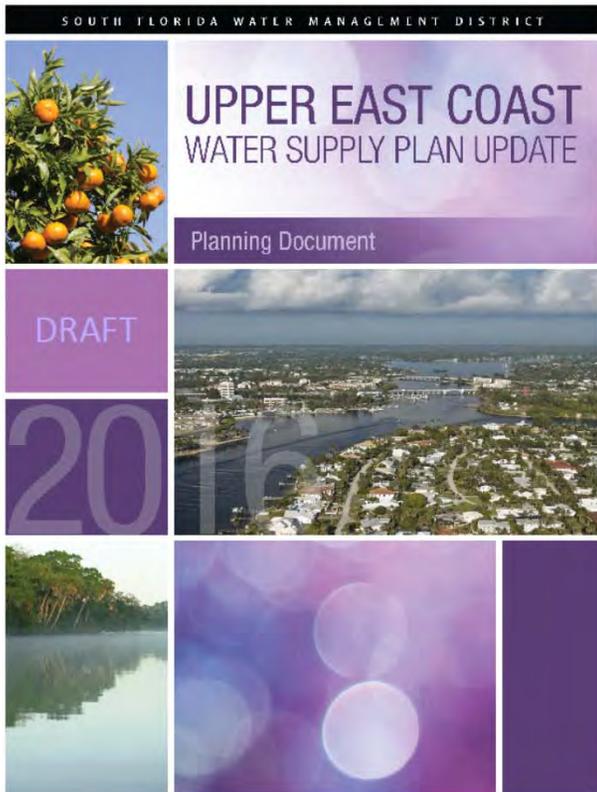
# Regional Water Supply Plan Requirements



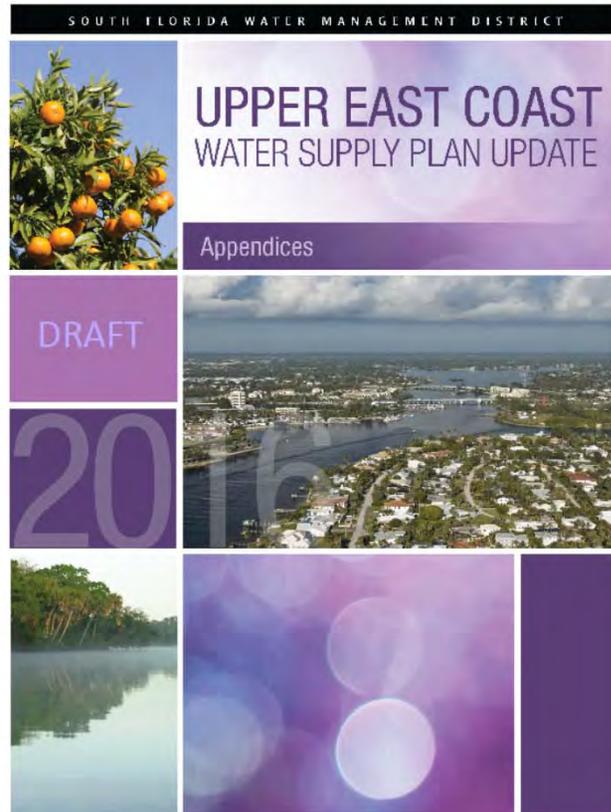
- 20-year planning period
- Demand estimates and projections
- Resource analyses/issue identification
- Evaluation of water source options
- Water Resource Development
  - Responsibility of Water Management
- Water Supply Development
  - Responsibility of Water Utilities/Users
- Minimum Flows and Levels (MFLs)
  - Prevention or Recovery Strategies

# 2016 Draft Upper East Coast Plan Update Documents

## Planning



## Appendices

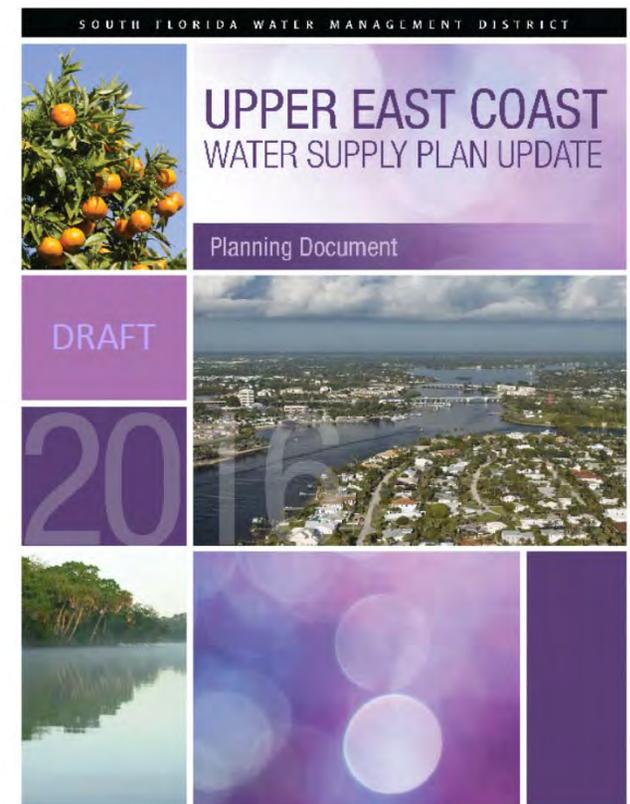


## Support

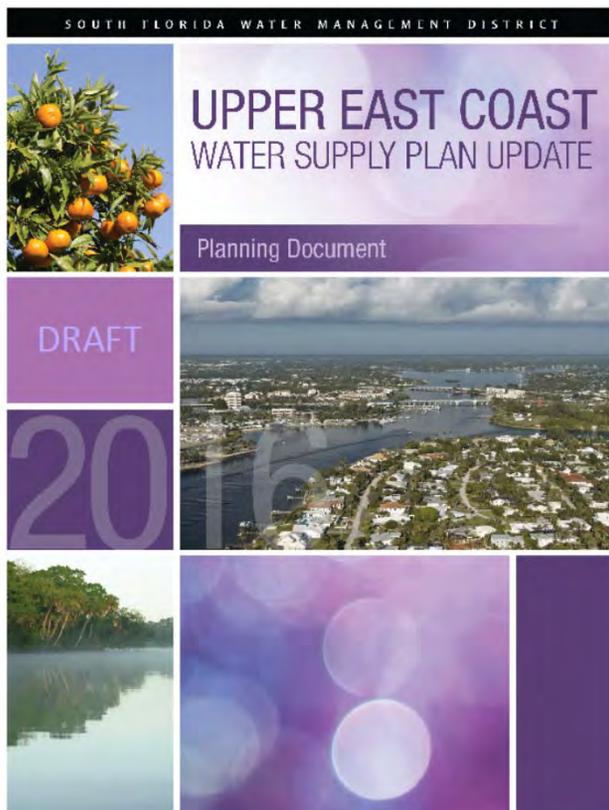


# Draft Planning Document Outline

- *Executive Summary*
- *Chapter 1: Introduction*
  - Plan goal and objectives, overview of planning area and update process and water supply planning through 2040
- *Chapter 2: Demand Estimates and Projections*
  - Population and demands by water use category
- *Chapter 3: Water Resource Analyses – Current and Future Conditions*
  - Water resources, water supply issues, regulatory protection, evaluation and analysis, sea level rise and climate change and FAS modeling



# Planning Document Outline *cont.*



- *Chapter 4: Water Resource Development Projects*
  - Water resource projects such as CERP, monitoring, MFLs, water reservations, and dispersed water management, modeling
- *Chapter 5: Evaluation of Water Source Options*
  - Surface water, groundwater, reclaimed water, storage, conservation, and seawater
- *Chapter 6: Water Supply Development Projects*
  - PWS projects to meet demands through 2040
  - Utility summaries
- *Chapter 7: Future Direction*
  - Water sources, coordination and climate change

# Goal of Water Supply Plans

*To identify sufficient water supply sources and future projects to meet existing and future reasonable-beneficial uses during a 1-in-10 year drought condition through 2040 while sustaining water resources and related natural systems.*



# Objectives

- **Water Supply**
  - Identify sufficient sources of water to meet reasonable-beneficial consumptive uses projected through 2040 under a 1-in-10 year drought event without causing harm to natural resources.
- **Natural Systems**
  - Enhance and protect wetland systems and water resources from harm due to water use, including water level drawdowns and the harmful movement of saline water towards freshwater aquifers.
- **Estuarine and Riverine Systems**
  - Protect and enhance estuarine and riverine systems through effective water deliveries and management of water resources.
- **Conservation and Alternative Source Development**
  - Encourage water conservation measures to improve the efficiency of water use, and support and promote the development of alternative sources of water.

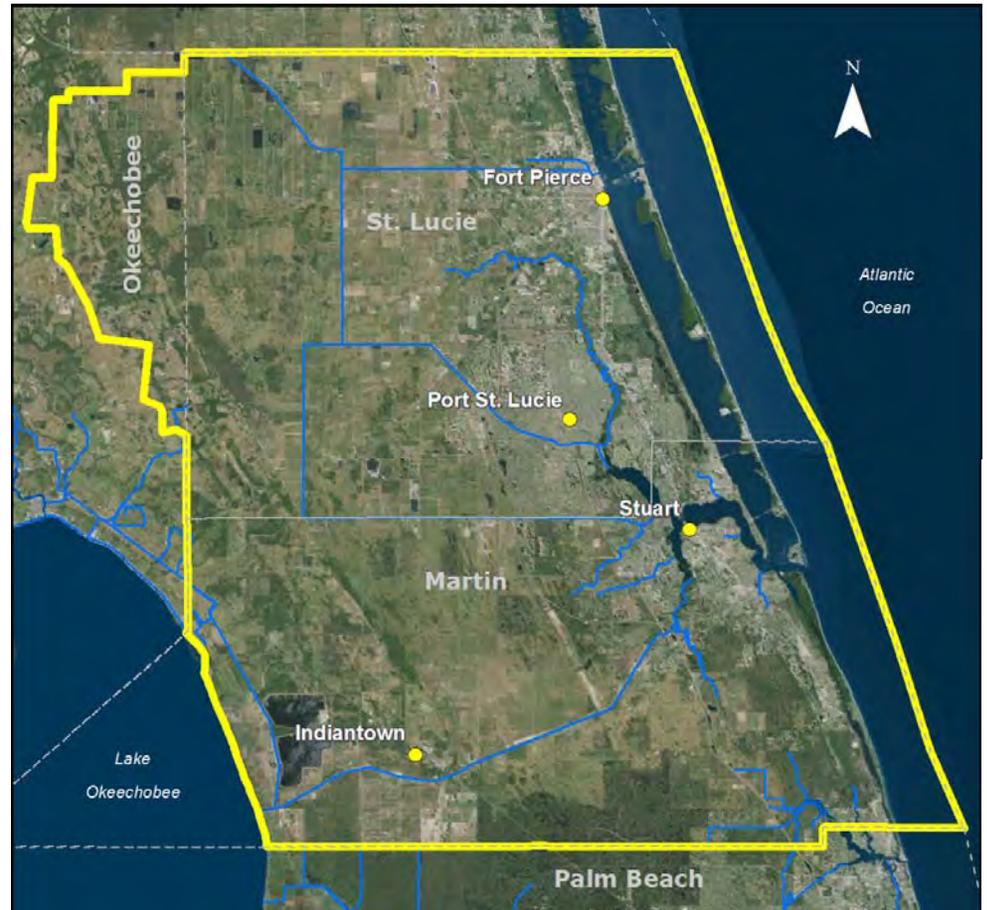
# Objectives cont.

- **Linkage with Local Governments**
  - Provide information to support local government coordination with the 2016 UEC Water Supply Plan through updates to the required Water Supply Facilities Work Plans.
- **Compatibility and Linkage with Other Efforts**
  - Enhance and protect wetland systems and water resources from harm due to water use, including drawdowns and the harmful movement of saline water.
- **Floridan Aquifer System**
  - Continue to encourage development of the Floridan aquifer system as a water source option and continue the monitoring program to enhance the understanding of the relationship among water use, water levels, and water quality.

# Upper East Coast (UEC) Planning Area

## Planning Horizon 2013 – 2040

- Population:
  - 2013 434,015
  - 2040 638,319
  - 47% increase*
- Irrigated agricultural acreage:
  - 2013 122,068
  - 2040 138,292
  - 13% increase*
- Gross water demands:
  - 2013 257 MGD
  - 2040 362 MGD
  - 41% increase*



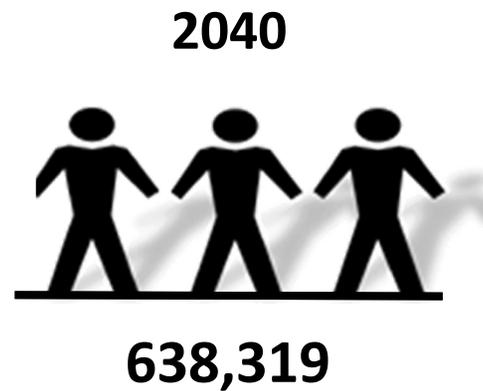
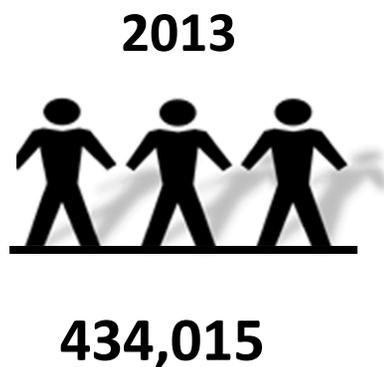
# Public Participation

- Water Resources Advisory Commission (WRAC)
- Two WRAC Issues Workshops
- Two public meetings on Floridan Aquifer modeling
- Meetings held with stakeholders, local governments and utilities
- Draft UEC documents distributed/posted on November 20
  - November 5 WRAC meeting
  - December 10 Governing Board meeting
  - Stakeholder meeting scheduled on December 11



# Population by County

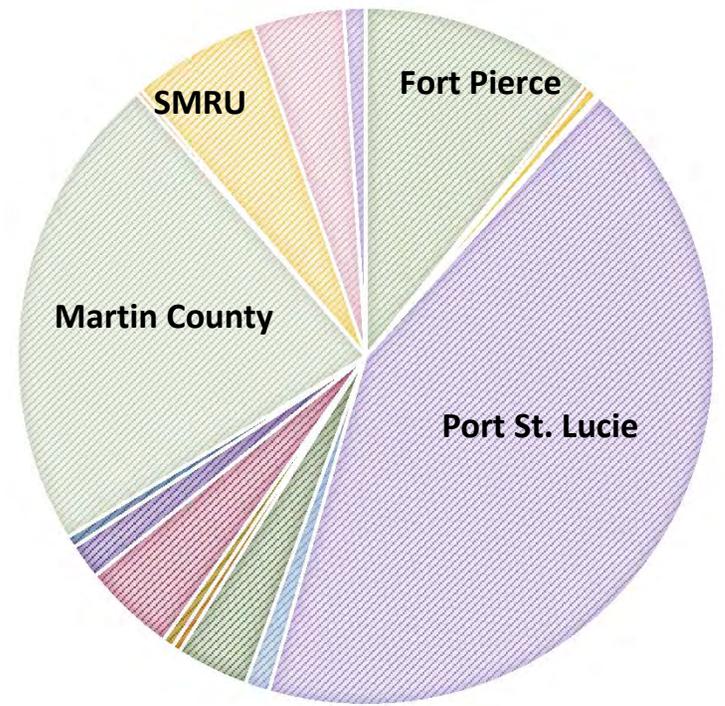
County Area	2013 Population	2040 Projected Population	Percentage Increase
<b>St. Lucie</b>	<b>282,762</b>	<b>454,201</b>	<b>60.6%</b>
<b>Martin</b>	<b>150,710</b>	<b>183,500</b>	<b>21.8%</b>
<b>NE Okeechobee County</b> <i>(Portion in UEC Planning Area)</i>	<b>543</b>	<b>618</b>	<b>13.8%</b>
<b>UEC Total</b>	<b>434,015</b>	<b>638,319</b>	<b>47.1%</b>



# Population Served by Public Water Supply

## 17 Public Water Supply Utilities

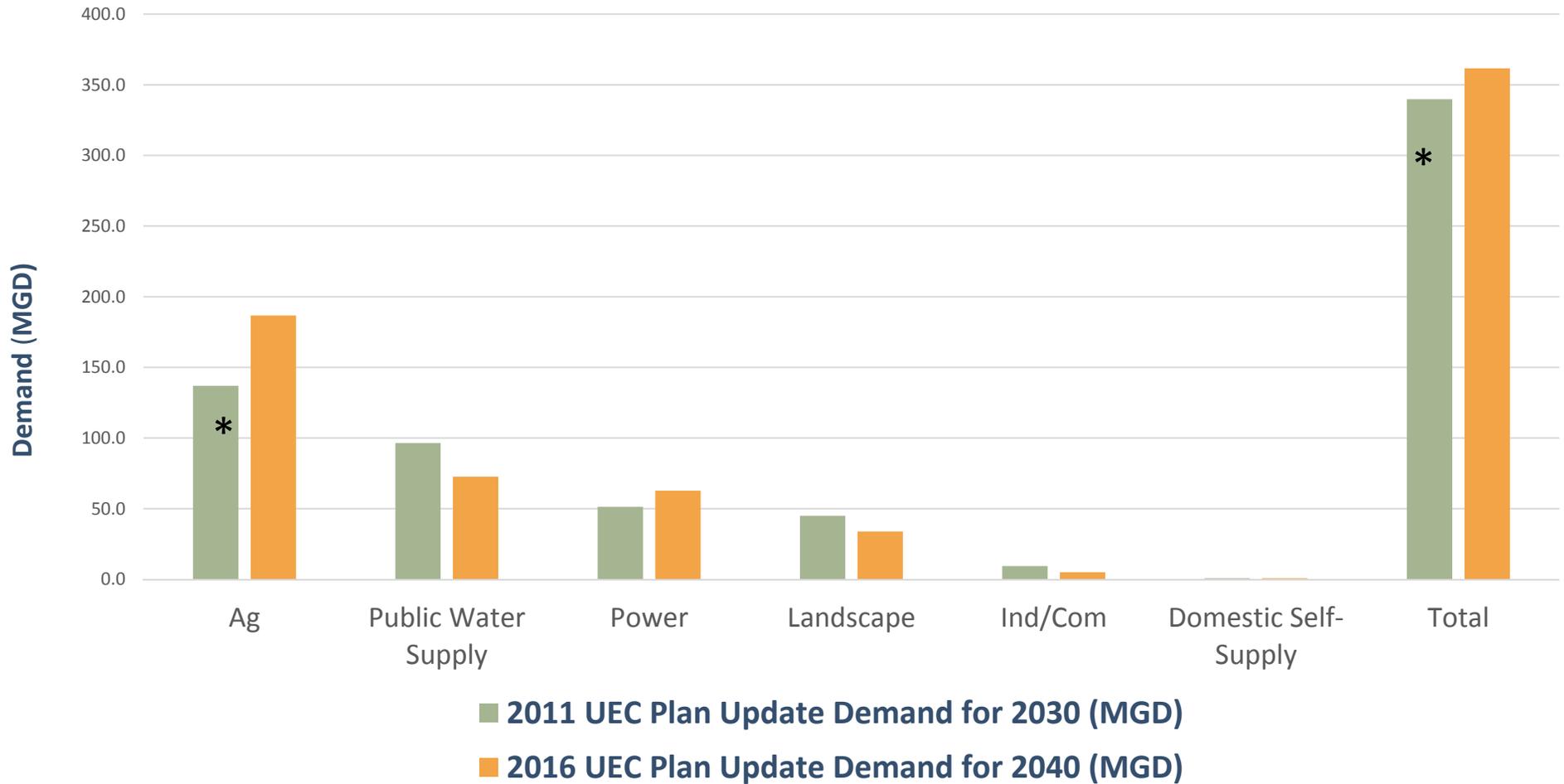
- 2000 218,204
- 2010 380,068
- 2013 399,318
- 2020 469,583
- 2030 564,700
- 2040 632,701



# Total Gross Demand Projections

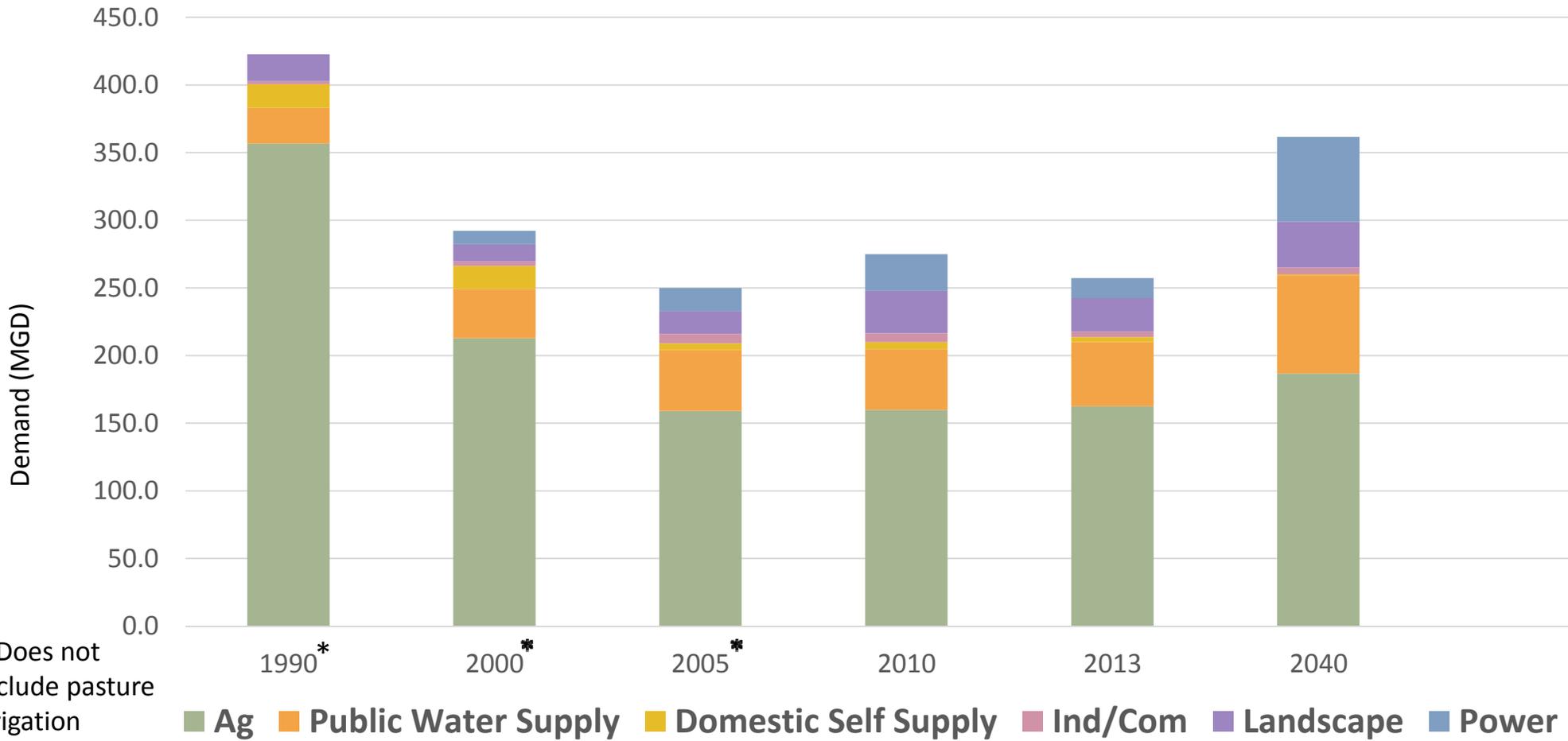
Water Use Category	2013 (MGD)	2040 (MGD)
Public Water Supply	47.4	72.6
Domestic Self-Supply	3.8	0.8
Agricultural Self-Supply	162.5	186.7
Industrial/Commercial/Institutional Self-Supply	4.0	5.0
Recreational/Landscape Self-Supply	24.7	33.9
Power Generation Self-Supply	14.8	62.7
<b>Total for UEC Planning Area</b>	<b>257.2</b>	<b>361.6</b>

# Gross Demand Projections 2030 (2011 UEC Plan) and 2040 (2016 UEC Plan)

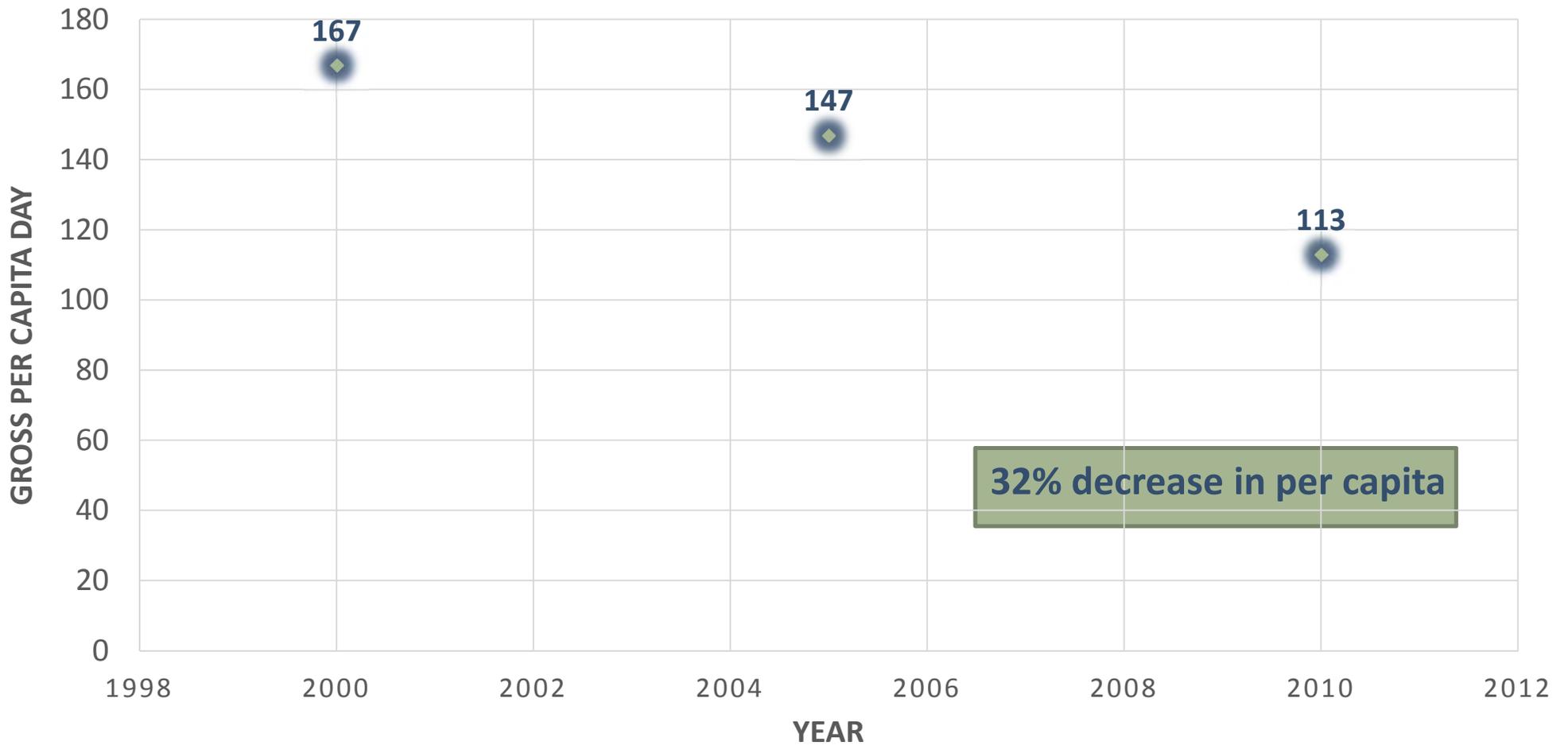


\* Does not include pasture irrigation

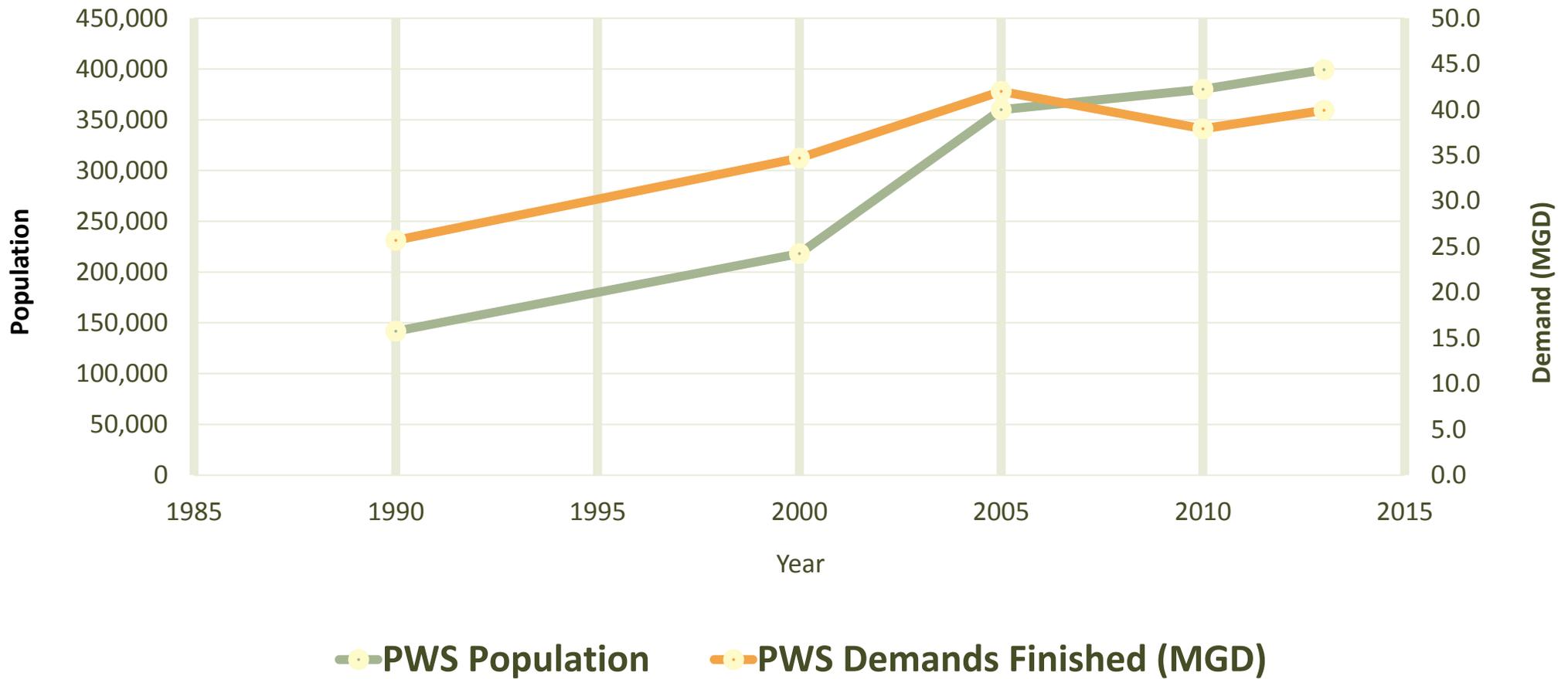
# Historical and Projected Water Use Gross Demands Average Conditions



# Gross Water Use Per Capita Per Day



# Historical Public Water Supply (PWS) Population and Finished Water Demands



# Agricultural Self-Supply: 2013 and 2040 Acres

**Total Acres by Crop Category: 2013 and 2040**

Year	Citrus	Irrigated Pasture	Other Fruits & Nuts	Vegetables Melons Berries	Sugarcane	Other Field Crops	Sod	Greenhouse / Nursery	Total
2013	45,379	38,698	147.2	9,568	17,952	1,458	4,601	4,264	122,068
2040	57,300	38,698	147.2	13,022	17,952	1,458	5,450	4,264	138,292



# Agricultural Acres

## SFWMD 2040 and FSAID2 2035

SFWMD 2040 UEC Irrigated Acreage by Crop Type		FSAID2 2035 UEC Irrigated Acreage by Crop Type	
Crop Category	2040	Crop Category	2035
Citrus	57,300	Citrus	56,842
Irrigated Pasture	38,698	Hay	3,155
Vegetables, Melons & Berries	13,022	Vegetables (Fresh Market)	5,269
Sugarcane	17,952	Sugarcane	9,962
Sod	5,450	Sod	5,980
Greenhouse/Nursery	4,264	Greenhouse/Nursery	3,722
Other Fruits & Nuts	147	Fruit (Non-citrus)	0
Other Field Crops	1,458	Potatoes	2,081
<b>Total</b>	<b>138,292</b>	<b>Total</b>	<b>87,012</b>

# Agricultural Demands

## SFWMD 2040 and FSAID2 2035

### SFWMD Agricultural Average Year Demand (in MGD) for the UEC Planning Area by County

County	2015	2020	2025	2030	2035	2040
Martin County	77.6	77.3	78.0	79.0	80.0	83.8
St. Lucie County	81.2	79.6	80.8	82.1	85.2	90.2
Okeechobee County in UEC	11.7	11.8	11.8	12.2	12.4	12.6
<b>Total</b>	<b>170.5</b>	<b>168.7</b>	<b>170.6</b>	<b>173.3</b>	<b>178.6</b>	<b>186.6</b>

### FSAID2 Agricultural Average Year Demand (in MGD) for the UEC Planning Area by County

County	2015	2020	2025	2030	2035
Martin County	52.4	51.1	50.7	56.6	61.1
St. Lucie County	69.6	64.5	60.5	70.5	76.2
Okeechobee County in UEC	4.0	3.7	3.3	3.4	3.6
<b>Total</b>	<b>126.0</b>	<b>119.3</b>	<b>114.5</b>	<b>130.5</b>	<b>141.0</b>

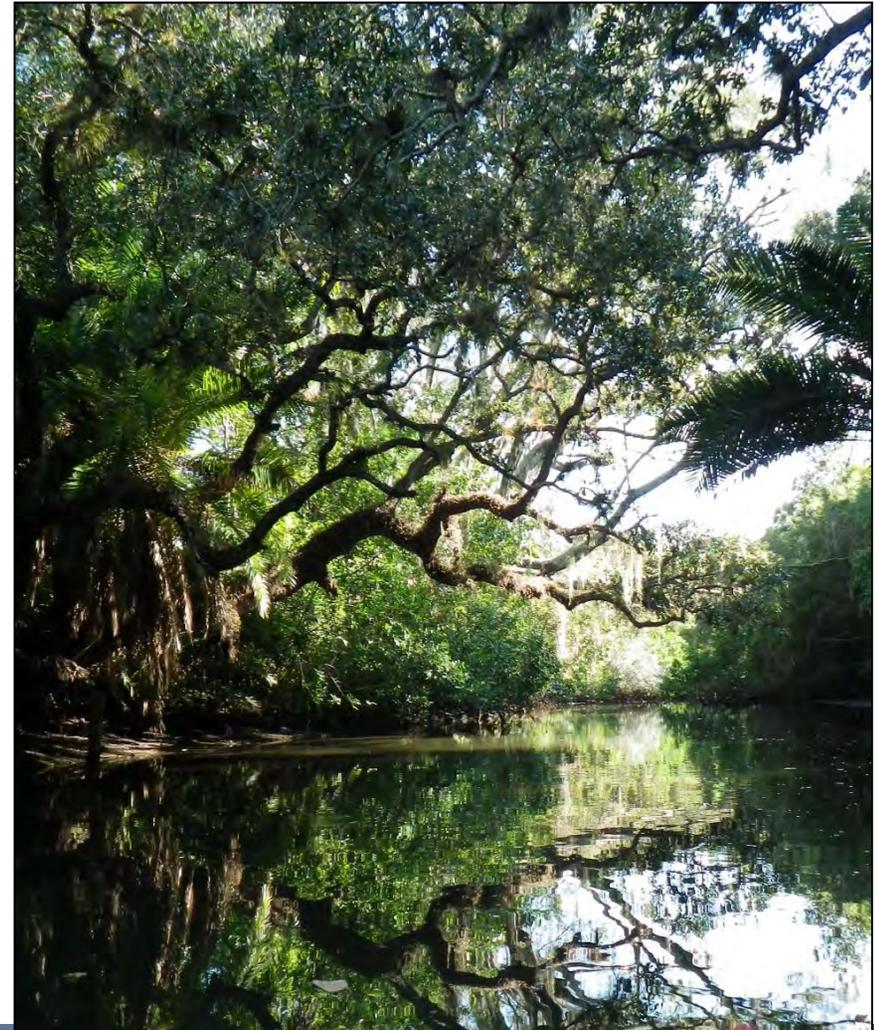
# Water Supply Issues

- In many areas, especially coastal areas, increases in withdrawals from surficial aquifers limited
- Surface water availability (storage) limited
  - C-23, C-24, C-25, C-44 canals and Lake Okeechobee Service Area Restricted Allocation Rules
  - Lake Okeechobee Service Area (LORS 2008)
- Freshwater discharges affecting coastal resources
  - Timing and volume
- Long-term availability of Floridan Aquifer System

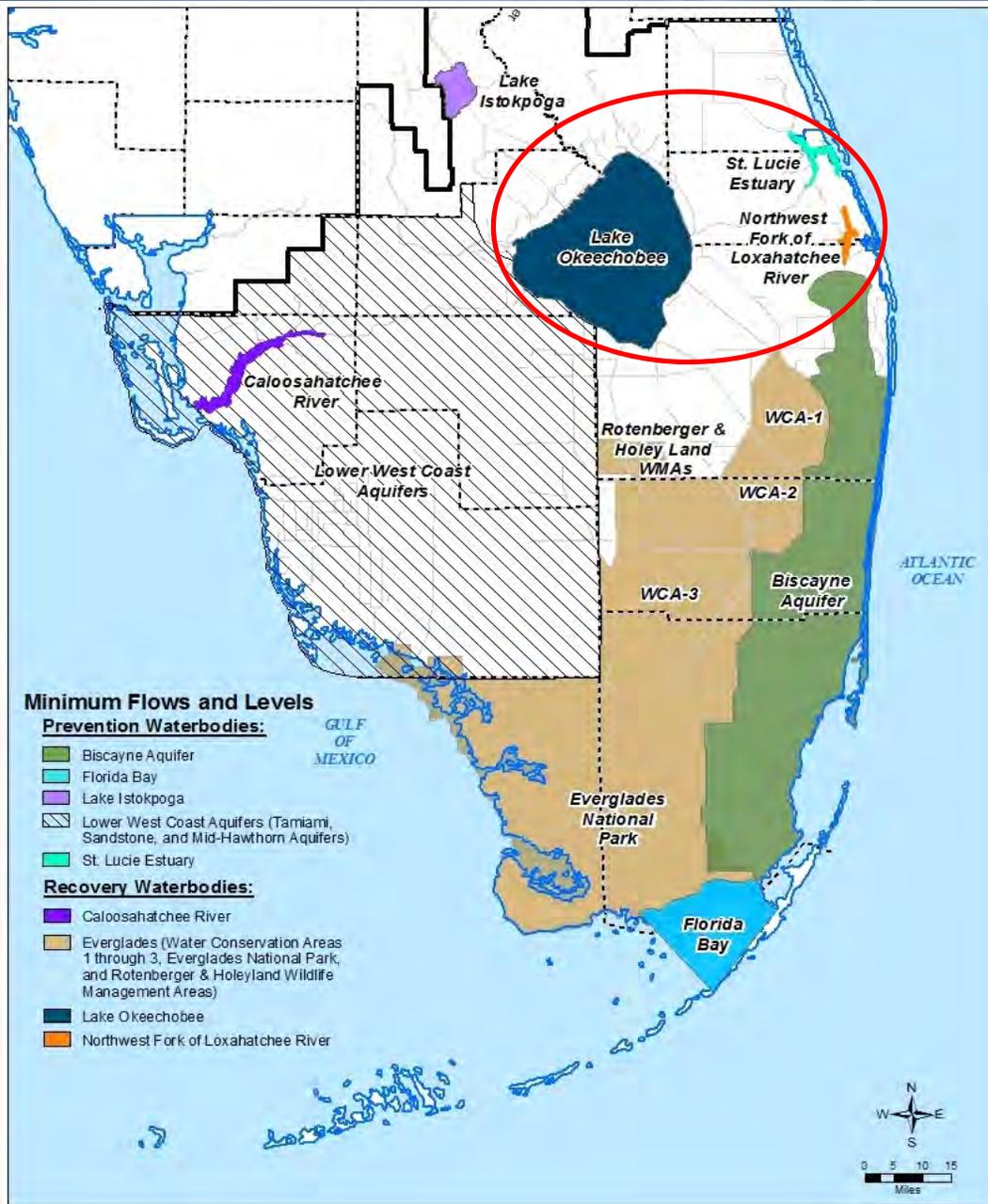


# Regulatory Protection of Water Resources

- Water Use Permitting
- Minimum Flows and Levels
- Water Reservations
- Water Shortage
- Restricted Allocation Areas



## Minimum Flows and Levels in SFWMD



### ■ With Prevention Strategies

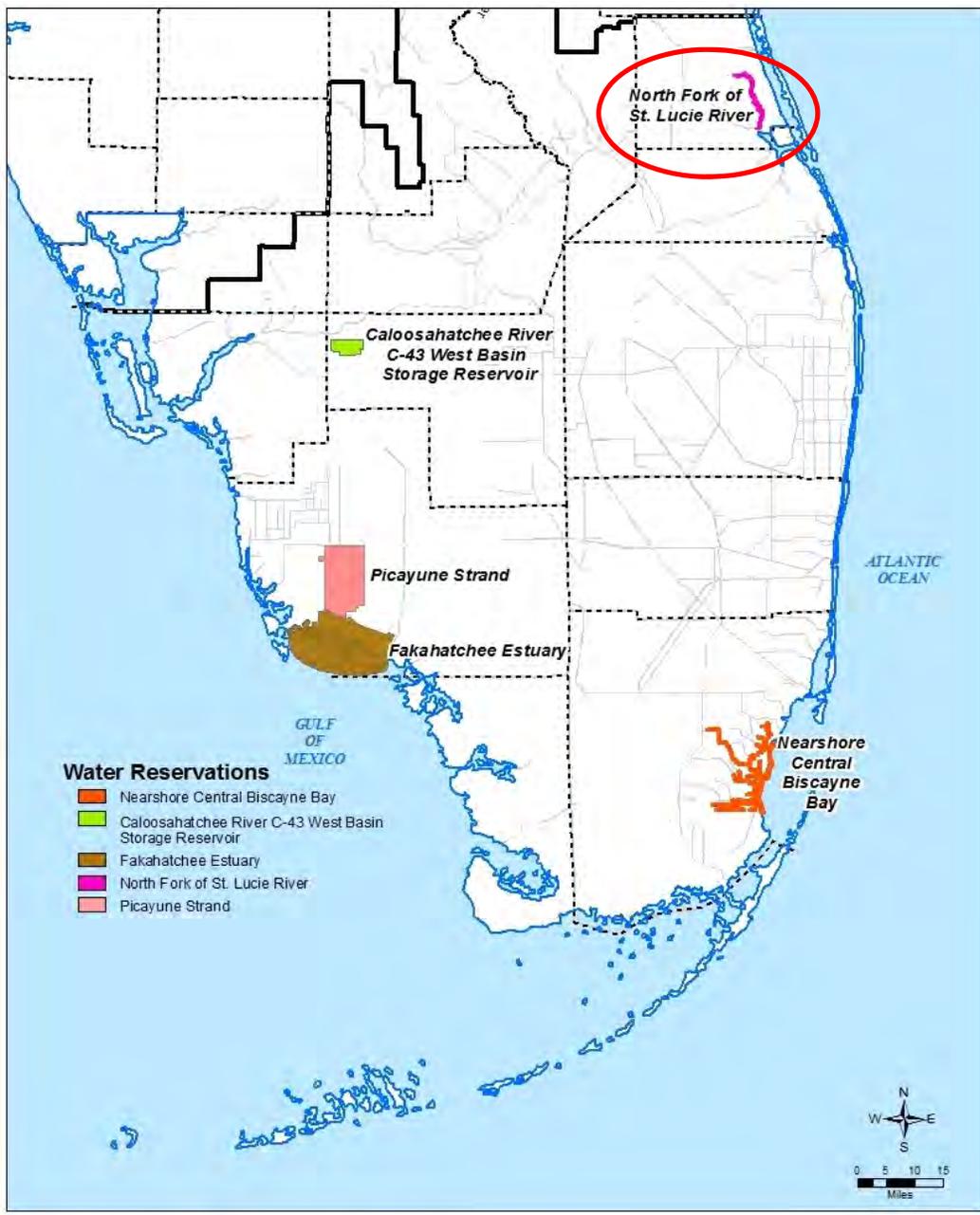
- Biscayne Aquifer – 2001
- Lower West Coast Aquifers – 2001
- **St Lucie Estuary – 2002**
- Lake Istokpoga – 2006
- Florida Bay – 2006

### ■ With Recovery Strategies

- Caloosahatchee River – 2001
- Everglades – 2001
- **Lake Okeechobee – 2001**
- **Northwest Fork of Loxahatchee River – 2003**

*Covers 7.2 million acres Districtwide*

# Water Reservations in SFWMD



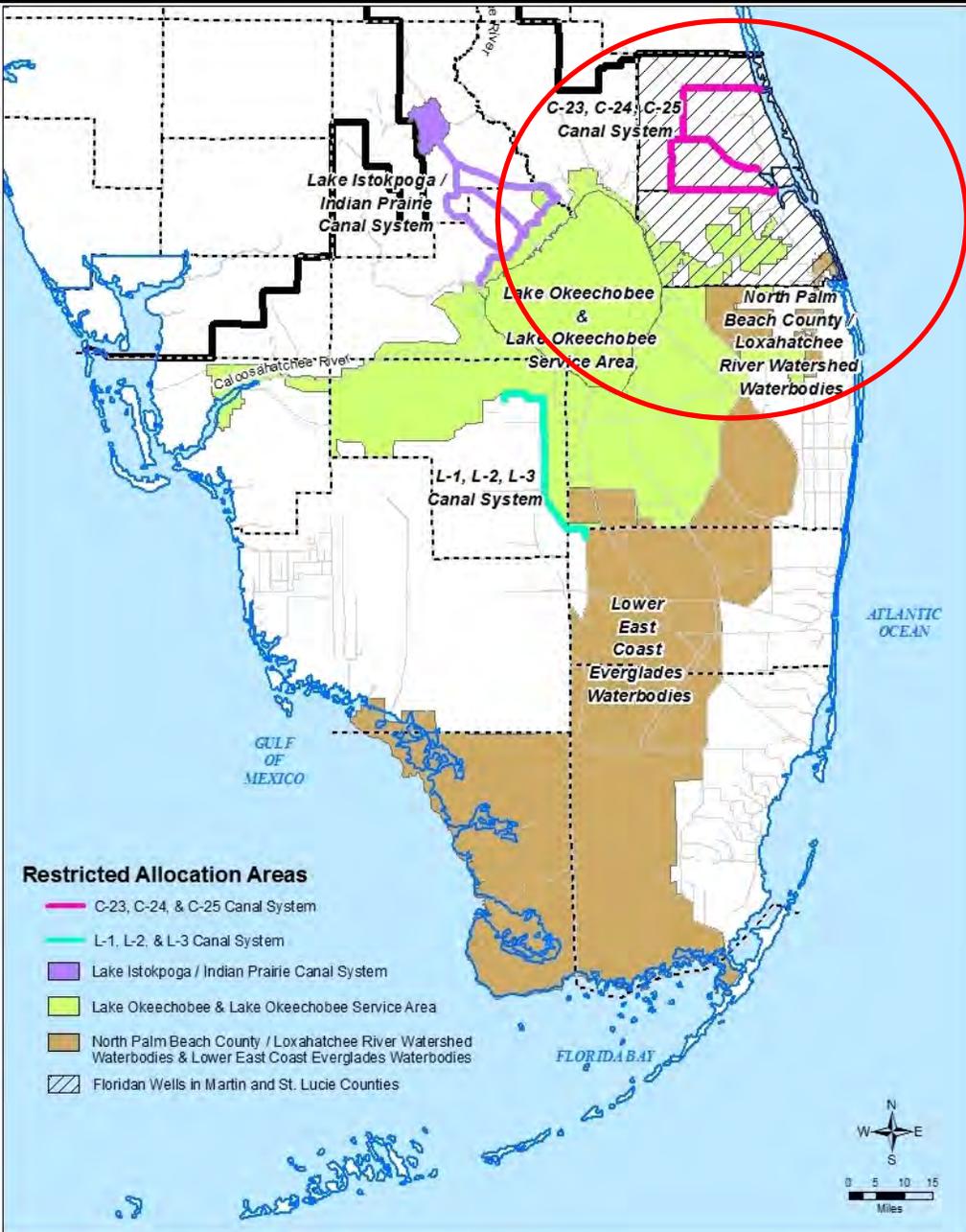
- Picayune Strand – 2009
- Fakahatchee Estuary – 2009
- **North Fork of the St. Lucie River – 2010**
- Nearshore Central Biscayne Bay – 2013
- Caloosahatchee River C-43 West Basin Storage Reservoir – 2014

*Covers 343,674 acres Districtwide*

# Restricted Allocation Areas in SFWMD

- C-23, C-24, & C-25 Canal System- 1981
- L-1, L-2, & L-3 Canal System -1981
- Lake Istokpoga/Indian Prairie Canal System - 1981
- North Palm Beach County /Loxahatchee River Watershed - 2007
- Lower East Coast Everglades Waterbodies – 2007
- Pumps on Floridan Wells in Martin and St. Lucie Counties - 2007
- Lake Okeechobee & Lake Okeechobee Service Area – 2008

*Covers 7.5 million acres Districtwide*

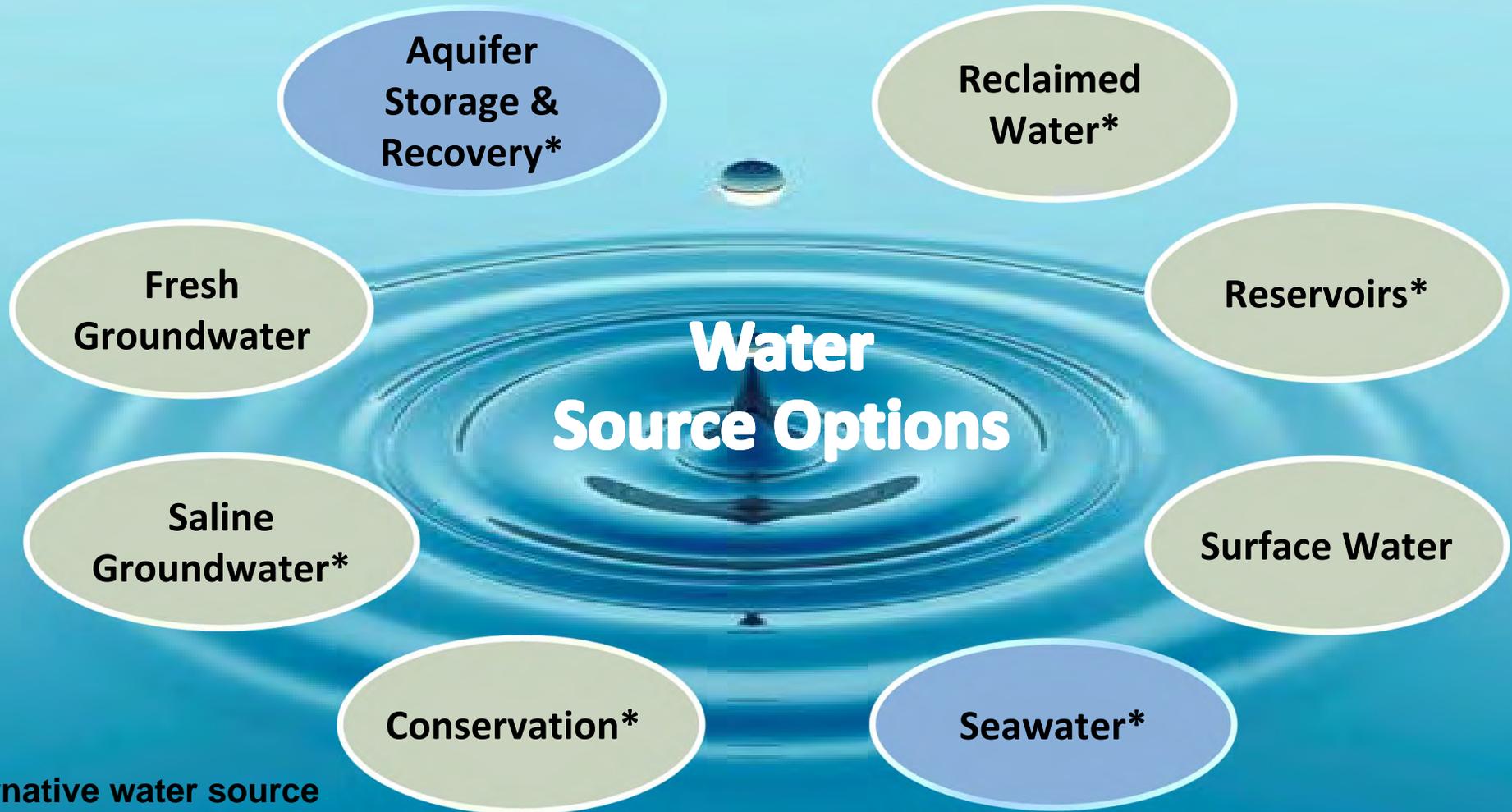


# Saltwater Intrusion



- Surficial Aquifer System saltwater interface
  - 2009 and 2014 estimated saltwater intrusion isochlor lines

# Water Source Options

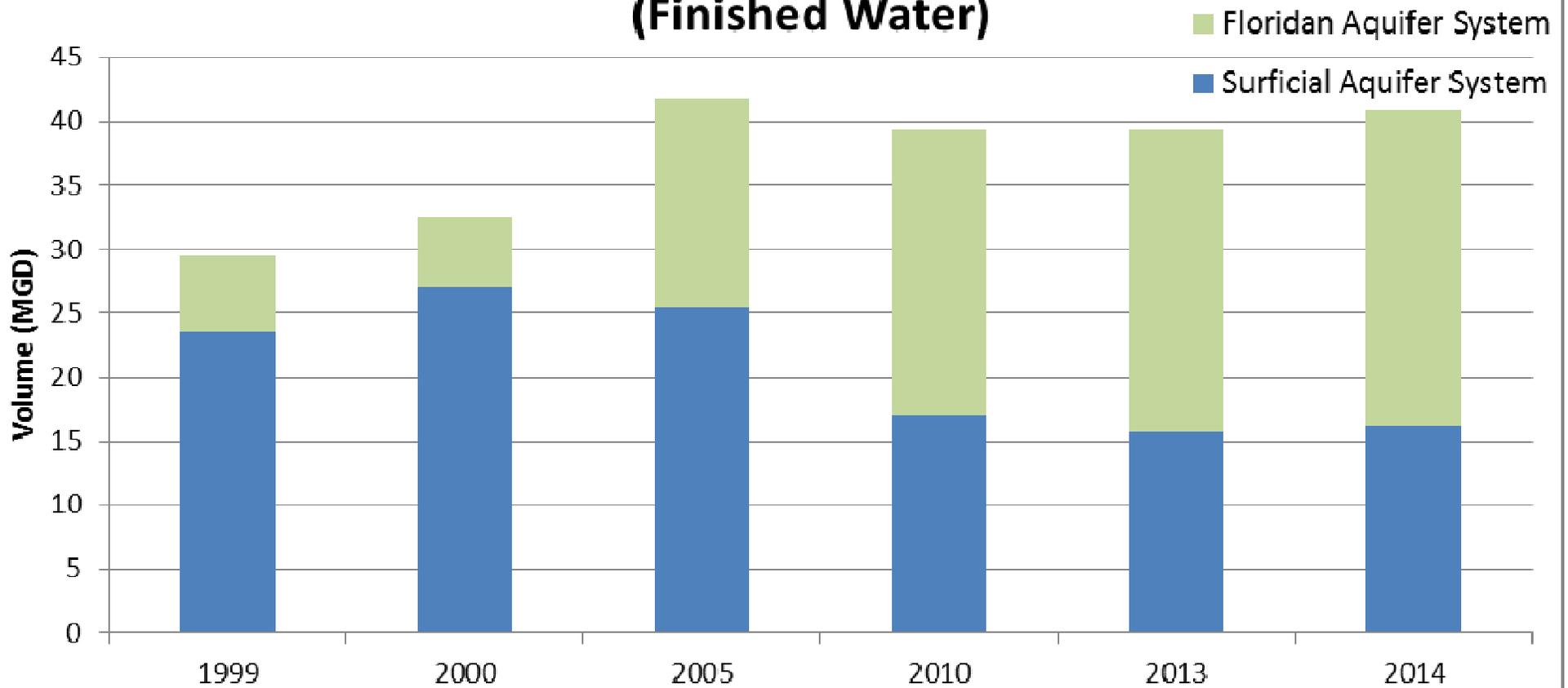


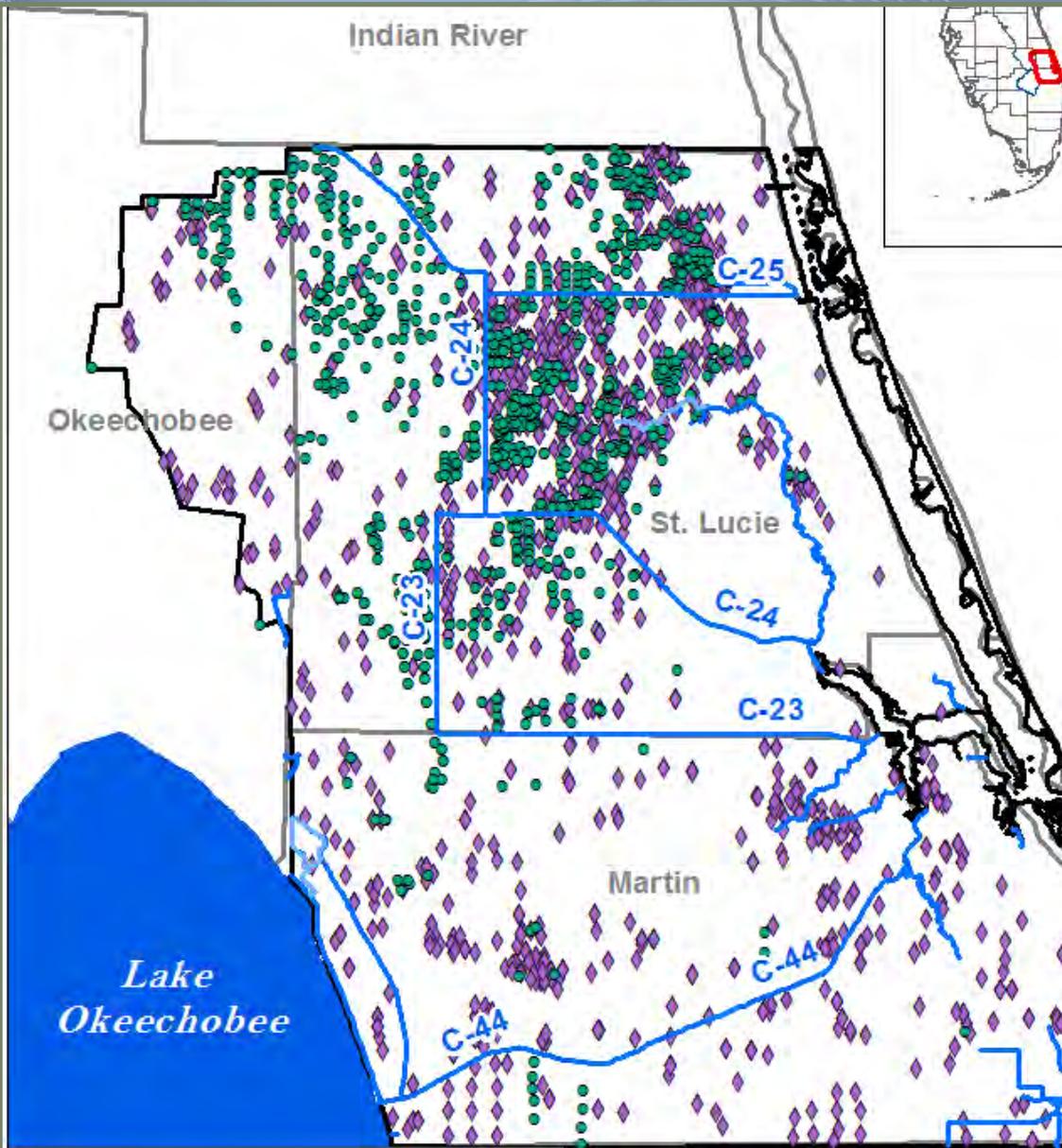
# Water Resource Development

- Water Resource Development Project
  - Regional in nature and generally the responsibility of a water management district
- Hydrogeology
  - Groundwater and wetland monitoring, groundwater and evapotranspiration assessments and drilling and testing
- Modeling
  - East Coast Floridan Model
- Comprehensive Everglades Restoration Plan (CERP)
  - C-44 (St. Lucie Canal) Reservoir and Stormwater Treatment Area Project

# Public Water Supply Surficial and Floridan Aquifer Use

## Potable Water Utilities Water Sources (Finished Water)



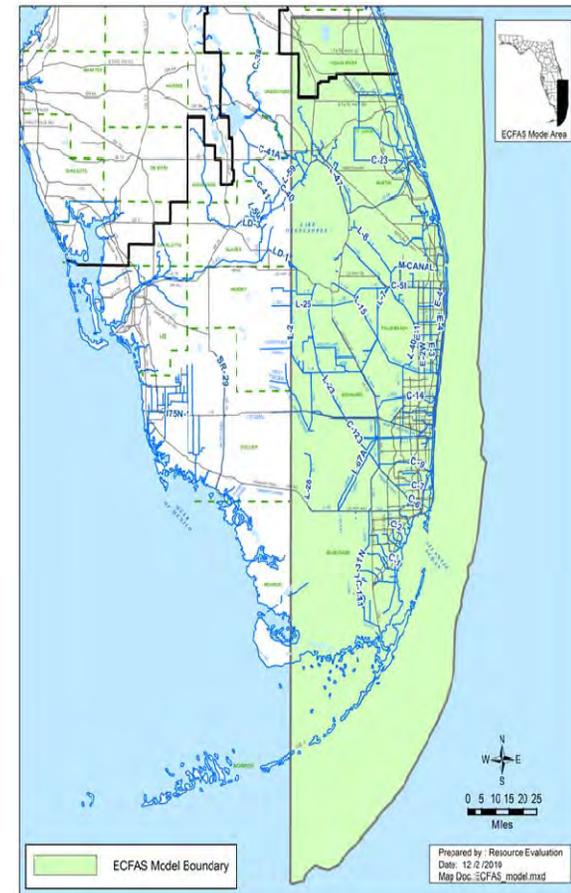


# Agricultural Water Use Permits and Sources

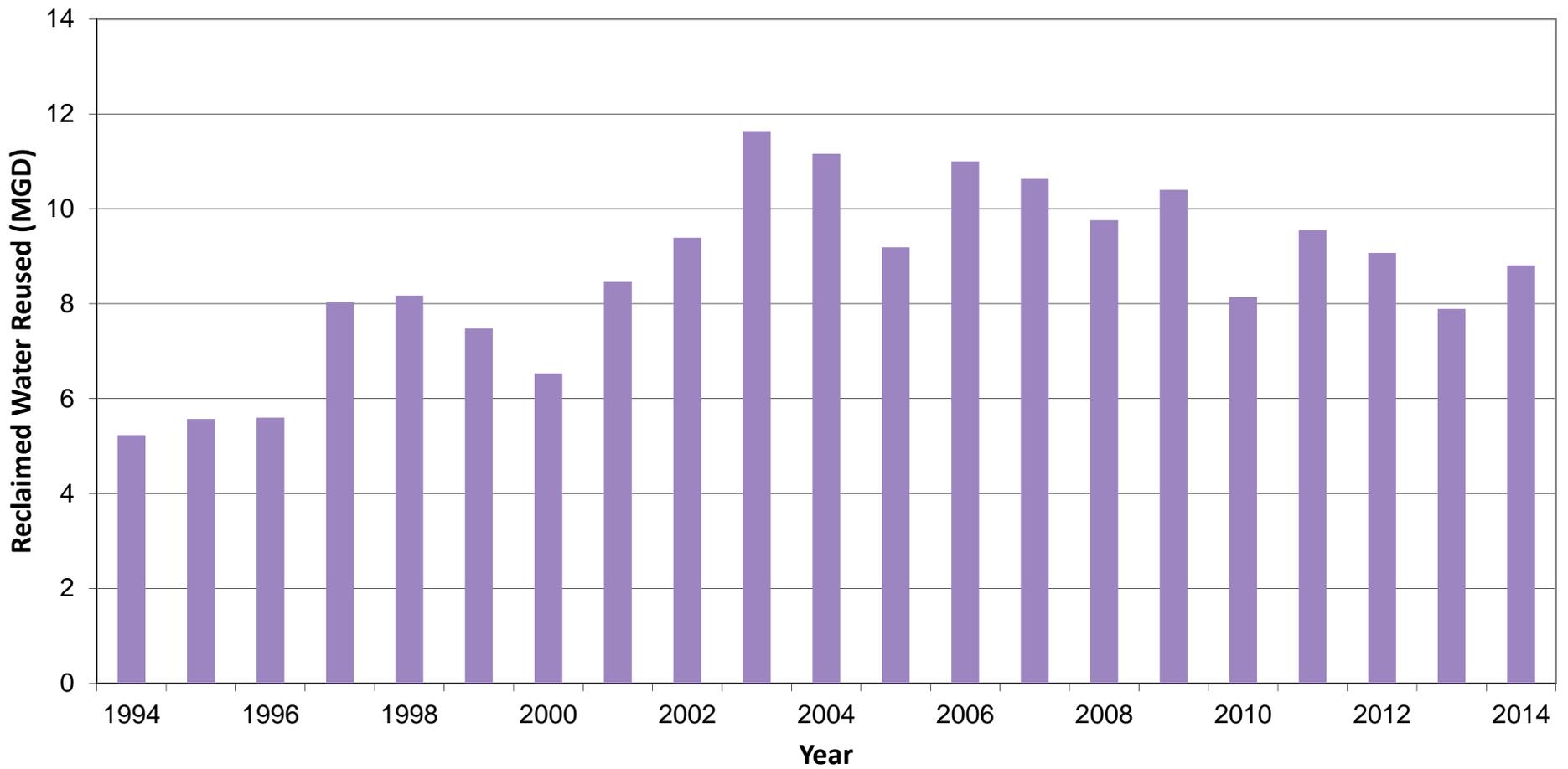
- Agricultural Permits**
- Floridan Aquifer System
  - ◆ Surface Water

# East Coast Floridan Model (ECFM) Conclusions for UEC Planning Area

- Most areas show little or no change in water levels in the Upper Permeable Zone (UPZ) and the Avon Park Permeable Zone (APPZ)
- Withdrawals will have an effect on water levels and water quality in northern St. Lucie County
- Potential decreases in artesian flow in portions of St. Lucie County
- Some decrease in water quality will likely continue for public water supply utilities drawing from the APPZ



# UEC Reuse History 1994 - 2014

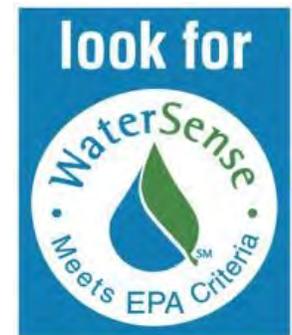


# Water Conservation

- All water sources should be used efficiently by all users
- Agriculture
  - Conversion to microirrigation
  - FDACS Best Management Practices
- Public water supply per capita use rate

2000 GPCD	2005 GPCD	2010 - 2013 GPCD
167	147	113

GPCD - gallons per capita per day



*The cheapest gallon of water is the gallon we don't use*

# Water Supply Development Projects Proposed by Utilities

- Potable
  - Only 1 utility needs projects to meet 2040 demand projections or treatment requirements
  - 11 of the 17 utilities did not propose new projects
  - 6 utilities proposed future projects (65.6 MGD)
- Non-Potable
  - 4 reclaimed water distribution projects included (15.4 MGD)



# Future Direction

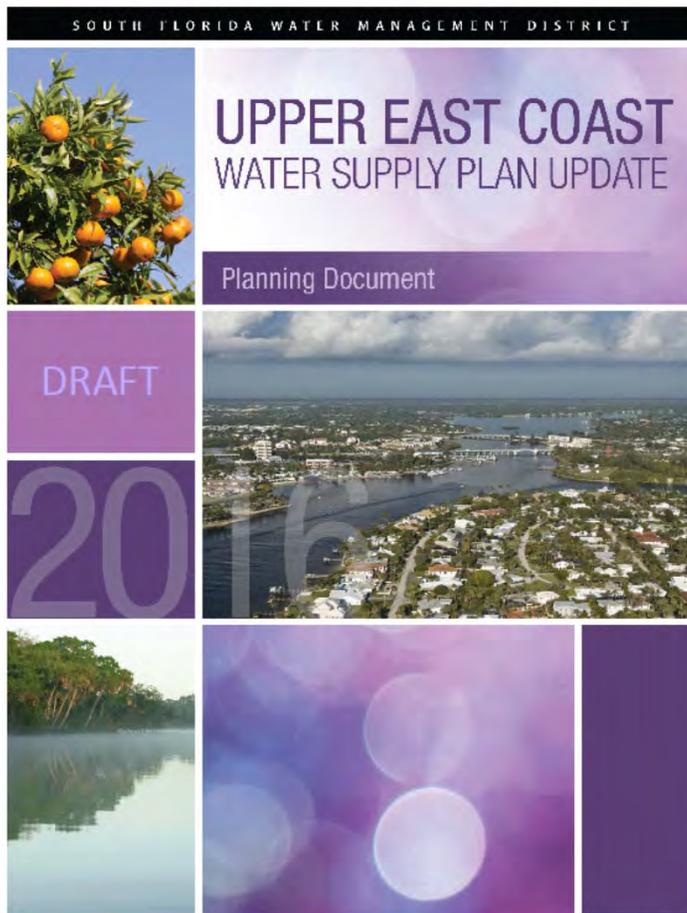
- Continue to work with Floridan Aquifer System stakeholders to better understand and crop water quality tolerances
- Successful long-term management of Floridan for Public Water Supply
- Evaluate current aquifer monitoring programs and enhance as necessary
- Continue to implement Comprehensive Everglades Restoration Plan (CERP)
- Encourage and promote water reuse and conservation measures
- Evaluate potential impacts and adaptations of sea level rise and climate change
- Coordinate with local governments, utilities and adjacent water management districts

# Link Land Use and Water Supply Planning (Chapter 163, F.S.)



- **After the District Governing Board approves the Water Supply Plan:**
  - All local governments must amend their comprehensive plan to incorporate a water supply facilities work plan within 18 months of water supply plan update
    - If Plan approved in March 2016 - work plans would be due in September 2017
  - Utilities identify the projects to be developed
  - Utility Annual Progress Reports
    - District automated website – due annually in November

# Conclusion



## Plan Conclusion

The future water demands of the region can continue to be met through the 2040 planning horizon with appropriate management, conservation and implementation of projects in this Plan

### **Dependent on completion of:**

- CERP and other projects to meet environmental needs
- Water supply development projects by one utility

# UEC Water Supply Plan Information

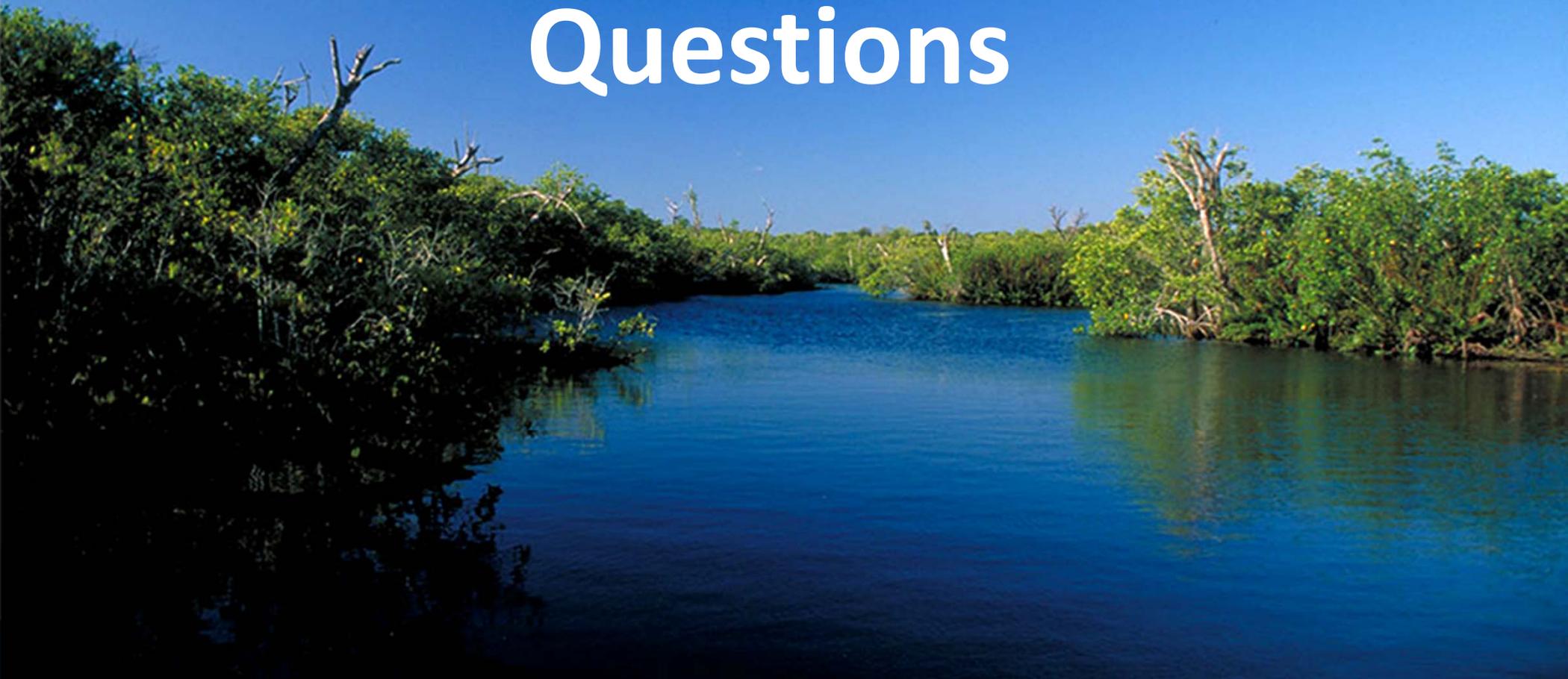
The screenshot shows a web browser window displaying the South Florida Water Management District website. The browser's address bar shows the URL <http://www.sfwmd.gov/portal/page/portal/xweb%20-%20release>. The website's navigation menu includes links for Home, About Us, Managing & Protecting Water, Protecting & Restoring Ecosystems, News, and Library & Multimedia. Below the navigation menu, there are dropdown menus for Residents & Visitors, Businesses, Scientists & Engineers, Educators & Students, Topics, and Regions. A search bar is also present. The main content area features a large image of a water body with a map overlay showing the Upper East Coast Water Supply Plan area. The map highlights the Upper East Coast region in orange and yellow, with a smaller inset map of Florida showing the location. Below the image, the text reads "Upper East Coast Water Supply Plan" with a "VIEW LARGER" button. To the right, there is a "In the News" section with a list of recent news items, including "SFWMD Welcomes New Executive Director (Oct 05)", "Water Resource Education Program Hits 10-Year Mark (Sep 30)", "SFWMD 2016 Budget Supports Unprecedented Environmental Progress (Sep 22)", and "Neuroscience Institute is Mindful of Water Conservation (Sep 03)". Below the news section is a "NEWS ARCHIVE" link. On the left side, there is a "RELATED LINKS" section with a list of links, including "About Water Supply Planning", "Upper East Coast Water Supply Plans", "Upper East Coast Floridan Aquifer System Modeling Project", "Water Supply Facilities Work Plan Support", "Intergovernmental Programs: Linking Land and Water", "Alternative Water Supply", and "Where does our drinking water". At the bottom of the main content area, there is a section titled "UPPER EAST COAST (UEC) WATER SUPPLY PLAN DOCUMENTS" and an "Upcoming Events" section.

Further information including Plan documents, can be found at: [www.sfwmd.gov/watersupply](http://www.sfwmd.gov/watersupply) – then click on “Upper East Coast Plan”

**Comments due January 15, 2016**

**Send to Linda Hoppes ([lhoppes@sfwmd.gov](mailto:lhoppes@sfwmd.gov))**

# Questions



# Next Steps

- |                    |  |
|--------------------|--|
| <i>November 5</i>  | <i>Presentation to WRAC</i>            |
| <i>November 20</i> | <i>Distribute plan to stakeholders</i> |
| <i>December 10</i> | <i>Presentation to Governing Board</i> |
| <i>December 11</i> | <i>Stakeholder Public Workshop</i>     |
| <i>January 15</i>  | <i>Comment period ends</i>             |
| <i>March 3</i>     | <i>Final Plan to WRAC</i>              |
| <i>March 10</i>    | <i>Final Plan to Governing Board</i>   |



# Upper East Coast Water Supply Plan Update Workshop Stuart, FL

## SIGN IN SHEET December 11, 2015

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NAME	ADDRESS & PHONE	E-MAIL ADDRESS
UMESH ASRANI	900 SE OGDEN LN (772) 873-6426 PORT ST. LUCIE, FL 34983	UASRANI@ATT.NET
HM Ridgely		HRIDGELY@EVANSPROP.COM
Joshua Miller	450 SW UTILITY DR (772) 340-0220 PSL, FL 34986	j.miller@slwsd.org
Gene Rauth	Town of Jupiter Island	
Valerie Schulte	1701 S. 37th St Fort Pierce, FL 34947	vschulte@fpua.com
MARIO LOAIZA	9650 SE WATER ST. HOBE SOUND, FL 33453	mloaiza@j.ji.martin.fl.us

# Upper East Coast Water Supply Plan Update Workshop Stuart, FL

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NAME	ADDRESS & PHONE	EMAIL ADDRESS
Matt Hammond	2300 Virginia Ave Ft Pierce, FL (772)462-1134	hammondm@stluccoco.org
Betz Ross	Gunster 777 So. Flagler WFB	brross@gunster.com
Mary Kindel	1215W Flagler Ave. Stuart 34994 772-600-1206	mkindel@ci.stuart.fl.us
Michael D. Minton	Po Box 2757 Ft Pierce Fla	mminton@decannead.com
Ed Loonsomez	4545 GORSY LAWS FT PIERCE FL 34981	ESLT FPOA.COM
CHARLES GRANDE	9950 S. OCEAN DR SEASIDE BEACH 34957	CHASGRANDE@ BELL SOUTH, NET

Upper East Coast Water Supply Plan Update Workshop  
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NAME	ADDRESS & PHONE	E-MAIL ADDRESS
John Polley Martin County		jpolley@martin.fl.us
Steve Lamb		lamb@fla-inc.com
Debra Elliott	FDAS/O&P	relli@tfsund.gov
Anne Menway	Martin Co.	amenway@martin.fl.us

Upper East Coast Water Supply Plan Update Workshop  
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Name	Organization	Email Address
Laurie Waldie	SICM	Waldie1@StucciCo.org